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Animal Keepers' Forum



October 2015, Volume 42, No. 10



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293 ABOUT THE COVER

294 FROM THE PRESIDENT

296 COMING EVENTS

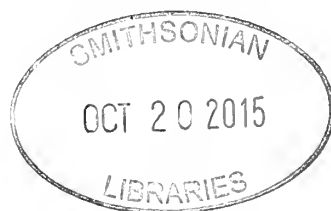
300 BOWLING FOR RHINOS

301 CALL FOR PAPERS

FEATURED ARTICLE

308-310

*Hand-rearing White-crested Laughing Thrushes
(Garrulax leucolophus) as a Method of Increasing
Captive Population Sustainability*
Alex Zelazo-Kessler



TRAINING TALES

312-314

*Using an Operant Conditioning Program to Target
Train a Yellow Stingray (Urobatus jamaicensis)*
Danielle Estes



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American Association of Zoo Keepers, Inc.

The American Association of Zoo Keepers, Inc. exists to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.

About the Cover

This month's cover features a Roseate Spoonbill (*Platalea ajaja*) from the Jacksonville Zoo. The photo was taken by Dane Jorgensen of the Birmingham Zoo who received an Excellence in Photography award at the 2015 AAZK Conference in St. Louis.

The Roseate Spoonbill, a large wading bird with pink plumage and a distinctive spatulate bill, is one of the most striking birds found in North America. They stand 85 cm tall and have a 1.3 m wingspan. Breeding in the United States is restricted to coastal Texas, southwestern Louisiana, and southern Florida. Their breeding range extends south from Florida through the Greater Antilles to Argentina and Chile. They inhabit marshes, swamps, ponds, and rivers within their range, feeding in both fresh and saltwater wetlands. Highly gregarious, Roseate Spoonbills breed and travel in flocks.

Spoonbills consume a varied diet of small fish, amphibians, aquatic invertebrates, and some plant material. They feed in the early morning and evening hours by wading through shallow water with their bills partially submerged. As a Roseate Spoonbill walks, it swings its head back and forth in a sideways motion. When the bird feels a prey item it snaps its bill closed, pulls the prey out of the water, and swallows it.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for **AKF**. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the Editor. The Editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or e-mail contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone (330) 483-1104; FAX (330) 483-1444; e-mail is shane.good@aazk.org. If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found at: aazk.org/akf-submission-guidelines/.

Deadline for each regular issue is the 3rd of the preceding month. Dedicated issues may have separate deadline dates and will be noted by the Editor.

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ANIMAL KEEPERS' FORUM

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NATIONAL ZOO KEEPER WEEK, PROGRAM MANAGER

Robin Sutker, Baltimore Zoo



If you want to be successful in a particular field of endeavor, I think perseverance is one of the key qualities. It's very important that you find something that you care about, that you have a deep passion for, because you're going to have to devote a lot of your life to it.

- George Lucas

My eight-year term as a member of AAZK's Board of Directors and my four-year term as your National President has come to an end. It's been an amazing journey, being part of an incredible organization that has grown exponentially in its focus on animal care professional development, conservation, and commitment towards effective communication. In short, our past efforts have brought us closer to realizing our vision of being the leader in the zoo and aquarium industry, fostering professional development and personal connections that advance animal care, animal welfare and conservation.

I will confess, it hasn't been the easiest of road trips; long hours, lost weekends, and countless hours of worry and stress over the success or failure of proposed projects. And yet, the pathway was my own "road not taken," my own personal refusal to accept status quo as a means of strategic planning. And, at the end of my term, I walk away knowing that our Association has made such a positive impact on our membership, profession, and conservation. Presidents before me have done the same.

As I step away from the role of President, I would like to share with you a number of small but valuable lessons which I have learned these past eight years.

Challenge your current assumptions

Much of what we know are based on assumptions. Your world will open up to great possibilities when you challenge your current knowledge base. Too often we hear the phrase "we have always done it that way." Challenge that assumption and "see things that never were, and say 'why not?'"

Commit to being a lifelong learner

Our profession is not static. In the multi-faceted world of animal care, innovative concepts abound. Those of you who have attended AAZK National Conferences can attest to this. Being a lifelong learner is what defines you as a professional. Feed your boundless curiosity, seek solutions, and strive to expand your knowledge base.

Be Safe

When working with animals, safety is not an option, it's a requirement. There are no shortcuts when it comes to safety; too many injuries and deaths have occurred in our profession as a result of some shortfall with regards to safety.

Be a dreamer

Innovation and change are not just phenomena which occur spontaneously in nature. They result from a dream of a better place. In your lifetime, there have been innumerable innovations and they probably all started with the thoughts: "What if?," "Wouldn't it be better if..?" "If we only had more..." The most productive part of dreaming is the conditional word "if" which is always followed by "then." Develop a plan, approximate towards completion and shape your vision into reality, just as you might shape a behavior with one of your animals.

Dare to break some molds

Life was not meant to be a constant state of status quo. It is a constant state of conflict and resolution. Many innovations in technology and culture have resulted from mold-breaking. Be aware that innovation requires change, and change requires that one challenges the status quo (and assumptions) of an organization or philosophy. Be an effective leader of change. If you are seeking change, develop a solid plan, communicate effectively to all affected, establish both buy-in and value to all affected, and exhibit patience.

Appreciate the complex nature of relationships

It's ironic that as a college student, I first learned about the complex nature of relationships during organic chemistry. The strengths of bonds, groups, and individuals can create amazing structures and complex organisms. It's amazing when we watch our animals interact with each other, their surroundings, and with us. Some remarkable enrichment concepts have emanated from understanding the relationship between an animal and its environment.

Foster the wonder

Take time in your day to look around you and soak up the amazing fact that you work with incredible animals. We also work with some pretty incredible people, too. However, we sometimes let the rust of disappointment work its way into the framework of our engagement. Focusing on the positive enables us to see possibilities and seek solutions.

Live a great story

We all have individual pathways in our professions and each pathway is unique. Remarkably, we are offered choices along the way regarding doors and pathways. Which door we open (or shut) and which pathway we choose to explore is our own personal choice and comes with both rewards and consequences. Consider this, what great story ever had a protagonist who didn't experience some drama?

Dare to lead

Maybe this should say "dare to have darts thrown at you" or "dare to be criticized". No one said leading was easy and it certainly is not without criticism. However, if you challenge your current assumptions, engage in a good dream, dare to break some molds, appreciate the complex nature of relationships, and foster the wonder, you will be on your way to being a very effective leader of change.

Every problem has a solution

There is a very simple dichotomy here. You are either part of the problem or part of the solution. However, do not confuse criticism as belonging to the problem. Effective criticism identifies problems and offers up solutions as a resolution to an identified problem. At the risk of sounding harsh, criticism without solutions is merely complaining. Which goes further with your institution, criticism with solutions or complaining? It's amazing how far the former will get you.

Bob's Golden Rule- Do unto others as you would do unto your animals

We go to great lengths to ensure that we provide a high level of quality of life and welfare for our animals. Our current Animal Welfare zeitgeist suggests that we approach animal care utilizing the five freedoms as a foundation for assessing how we manage animals. Agreed. Wouldn't

it be nice if we applied those five freedoms when interacting with each other? I am not asking for a kumbaya moment here but I hope that you will indulge me here when I say that operant conditioning, positive reinforcement, and enrichment are all concepts that are equally applicable to staff management. Sometimes, I think we just forget and focus on the task at hand. As future leaders in our industry, I hope you can dare to break some molds here.

Honestly, it's been a great journey. I have learned much during my eight years and every moment as your Association President has been an honor. As an Association, you taught me that collective direction is what coined the phrase "it takes a village to raise a child." When I look back at all the things that this Association has accomplished in the last eight years, I feel an overwhelming sense of pride.

I leave you in the very capable hands of Penny Jolly, who will be replacing me as President of AAZK. Her tenacity for details will help keep our programs in line with each individual destination. In addition to Penny's leadership, you will be supported by Wendy Lenhart, Bethany Bingham, and two new members of the Board of Directors, Bill Steele and Mary Ann Cisneros.

And finally, I leave you with the last stanza of one of my favorite poems by Robert Frost (The Road Not Taken, 1920)

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference.

I remain dedicated to the goals and ideals of AAZK and look forward to continuing to serve the Association at the end of my term.

As always, I extend the invitation to e-mail me at bob.cisneros@aazk.org I would love to hear from you.

Respectfully,



COMING EVENTS

Post upcoming events here!
e-mail shane.good@aazk.org

November 6-8, 2015

**Southeast Regional
Gorilla Workshop**

Tampa, FL

Hosted by Busch Gardens
Tampa.

For more information contact:
keri.bauer@buschgardens.com

November 7-10, 2015

**Zoological Association of
America National Conference**

Las Vegas, NV

For more information go to:
zaa.org

November 18-22, 2015

**New World Primate TAG
Husbandry Workshop**

San Diego, CA

Hosted by San Diego Zoo
For more information go to:
<https://www.bpzoo.org/nwptag-conference-registration/>

November 19-22, 2015

**5TH TREE KANGAROO SPECIES
SURVIVAL PROGRAM
WORKSHOP**

Milwaukee, WI

Hosted by Milwaukee County
Zoo

For more information contact
Jacque Blessington at:
jacsprat65@aol.com

March 19-24, 2016

AZA Mid-Year Conference

Omaha, NE

Hosted by Omaha's Henry
Doorly Zoo and Aquarium

For more information go to:
aza.org/midyearmeeting/

April 17-22, 2016

ABMA National Conference

Tampa, FL

Hosted by Lowry Park Zoo and
Busch Gardens Tampa

For more information go to:
theabma.org/abma-annual-conference/

May 12-17, 2016

**Best Practices in Animal
Keeping Course**

Buffalo, NY

Hosted by AZA and Buffalo Zoo

For more information go to:
<https://www.aza.org/BPAK.aspx>

June 12-16, 2016

**24th International Conference
on Bear Research &
Management**

Anchorage, AK

International Association
for Bear Research and
Management

For more information go to:
www.iba2016.com

June 22-25, 2016

**International Herpetological
Symposium**

St. Louis, MO

Hosted by Saint Louis Zoo
For more information go to the
International Herpetological
Symposium website.



September 19-23, 2016

AAZK National Conference

Memphis, TN

Hosted by Memphis Zoo AAZK
Chapter and Memphis Zoo.

More details coming soon!

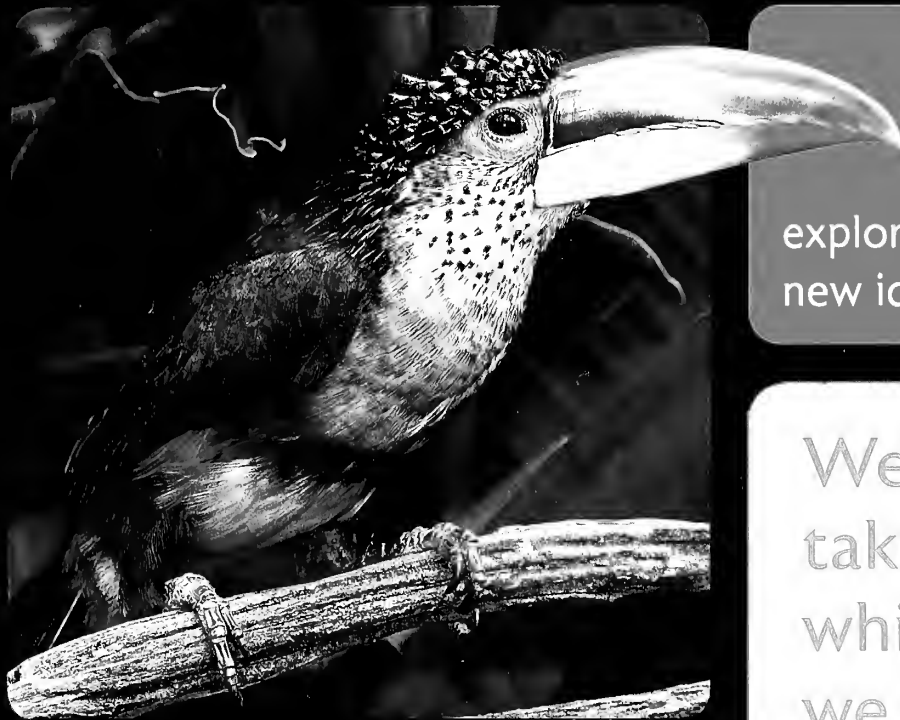
September 7-11, 2016

AZA National Conference

San Diego, CA

Hosted by San Diego Zoo
Global and SeaWorld San
Diego

For more information go to:
www.aza.org/annualconference/

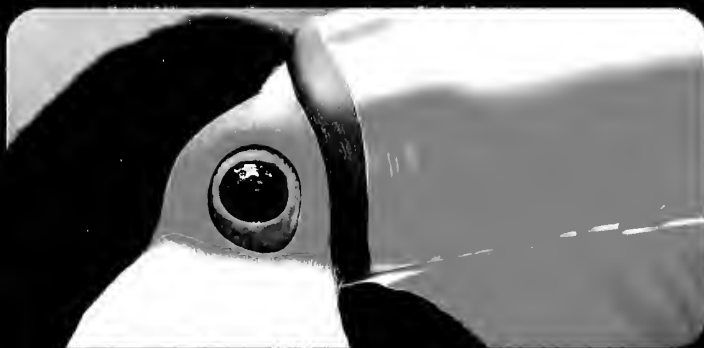


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AAZK is a non-profit organization (U.S. 501c3) made up of professional zoo keepers and other interested persons dedicated to professional animal care and conservation.

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Thank You!

The AAZK Board of Directors and Staff thanks the Topeka Chapter of AAZK for sponsoring this issue of the *Animal Keepers' Forum*. Your support is sincerely appreciated!

Congratulations 2015 Bowling For Rhinos Trip Winners!
The Top 2 money raisers each year are offered their choice of a 2-week trip to visit Lewa in Kenya or the Indonesian Parks with IRF.
#3 & 4 are awarded the 2 remaining trips.

#1 Kris Willis from LA AAZK raised \$55,000 (a record amount)

#2 Angie Snowie from Toronto AAZK raised \$22,507

#3 Ann Knutson from San Diego AAZK raised \$22,433

#4 Allycia Darst from Lincoln Park raised \$17,262

Trip winners have won trips with as little as \$850 (1995) to as much as \$55,000 in 2015. Trip winners have been from 18 DIFFERENT zoos. If we include the honorary trip, that number would be 24 DIFFERENT zoos!

Thank you to everyone who participates in Bowling For Rhinos, all those who help spread the word of the plight of the rhino AND to all those who help organize the amazing variety of BFR events each year! Together we CAN make a difference in the world! Woohoo!

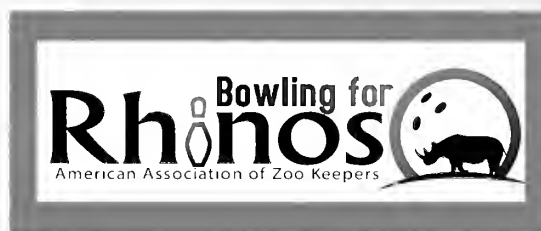


Each year, AAZK and Lewa reward an outstanding individual who has gone above and beyond in their extraordinary effort to organize BFR events. Often times, these behind-the-scenes efforts go unnoticed. It takes a great deal of effort to hold successful BFR events year after year.

Mollie Coym is the "2015 Honorary Bowling For Rhinos winner". Mollie and a companion will be hosted by Lewa for one week in October 2016. She has been recognized for her years of dedication and perseverance organizing the Houston Bowling For Rhinos events.

The 2015 Bowling For Rhinos Chapter Award goes to Jacksonville.

They are being recognized for their significant dedication and perseverance having Bowled EVERY YEAR since 1990 and having raised over \$92,000 for conservation worldwide.



The 2015 Top Ten Individual money raisers were:

1. Kris Willis - Los Angeles wins 2 week trip to Lewa-All time record!	\$55,000
2. Angie Snowie- Toronto wins 2 week trip to Lewa	\$22,507
3. Ann Knutson-San Diego wins 2 week trip to Indonesia	\$22,433
4. Allycia Darst-Lincoln Park wins 2 week trip to Indonesia	\$17,262
5. Renaldo Curtis Woodson - Oklahoma City	\$13,665
6. Joe Hauser - Buffalo	\$10,000
7. Hilary Colton - National Capital	\$9,765
8. Russel Pharr - Dallas	\$9,225
9. Lindsay Ireland - Detroit	\$9,000
10. Amber Berndt - Indianapolis	\$4,500

Top 10 money raising Chapters since Bowling For Rhinos started in 1990 as of end of 2014:

1. Portland \$292,842
2. Oklahoma City \$288,939
3. Dallas \$222,909
4. San Diego \$217,066
5. Los Angeles \$216,708
6. Detroit \$202,622
7. Utah \$197,413
8. Lincoln Park \$153,305
9. Greater Philadelphia \$149,166
10. North Carolina \$145,979

The 2014 Top 3 money raising AAZK Chapters were:

- #1. Los Angeles-\$50,010 (all time record!)
- #2. Portland-\$47,284
- #3. Utah-\$27,471

Coming Soon!

Prosimians

The dedicated issue on Prosimians is scheduled to appear as a double-issue in November/December of 2015. There will be no November issue, but rather a double-sized issue in December with everything you need to know about Prosimians. Consider it our holiday gift to the Prosimian-lovers among us!



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2015 AAZK AWARDS

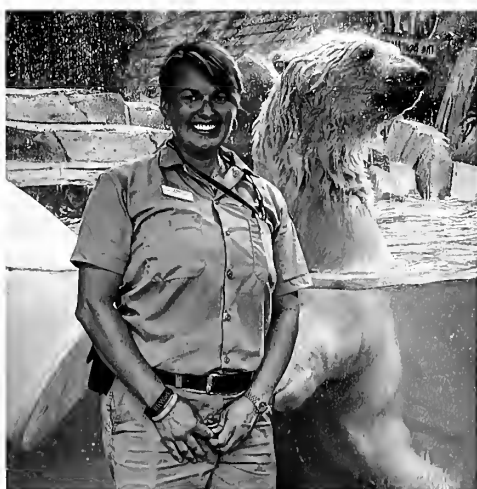
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Lifetime Achievement Award

Gisela Wiggins, North Carolina Zoological Park.

This award is in recognition of her outstanding commitment to professionalism in her thirty-year distinguished career. Specifically noted is her participation in the training and completion of successful voluntary cardiac ultrasounds on gorillas and chimps and pregnancy ultrasounds on gorillas, assisting with veterinary camps, teaching interns, helping with the veterinary residence program and volunteering with various rehab facilities in North Carolina. She is a founding member of the NC AAZK Chapter and held officer positions. On the national level, she served on the Board of Directors, Bylaws Chair and was Co-Chair of the 2013 National Conference.



Lutz Ruhe Meritorious Achievement - Professional of the Year Award

Erin Tully, Saint Louis Zoo

This award is in recognition of her outstanding commitment to professionalism during her distinguished career as a zoo keeper. Specially noted is her professionalism, innovation, active participation and extensive achievements in animal care and conservation and commitment to the St. Louis AAZK Chapter. Also noted is her work with the Endangered Wolf Center, Polar Bears International, keeper chats, the Zoo's Enrichment Committee and launching the St. Louis AAZK Travel Grant Program for keepers. Erin embodies the AAZK mission to advance animal care, promote public awareness, enhance professional development and contribute to local and global conservation.

Jean M. Hromadka Excellence in Animal Care Award

The Giraffe Team, Jason Bredahl, Amy Schilz, Andrea Bryant, Diana Cartier, Cheyenne Mountain Zoo.

This award is based on the Giraffe Team of four keepers for developing an operant conditioning program to safely provide hoof care and maintenance with non-sedated giraffe. Training techniques were tailored to each of the reticulated giraffes' personalities and learning styles. They created a "Giraffe Training and Enrichment" Facebook page, gave presentations on the giraffe herd, and hosted the first Giraffe Care Workshop. Also noted was their work in conservation, volunteer work and field research.

Lee Houts Excellence in Enrichment Award

Yvette Kemp, San Diego Zoo

for organizing and facilitating the Zoo's Keeper Enrichment Group and developing a Rating and Categories form, Daily Log, and adding an area Enrichment Section to the Zoo's Husbandry/Guidelines form and Enrichment binders. As Veterinary Services Enrichment Coordinator she works to obtain items for the hospital and enrichment shed, leads monthly enrichment workshops for special guest groups and spearheads "Keepers Teaching Keepers" to share best husbandry practices, training and enrichment with Mexican zoological institutions.

Primate House Team, Joe Knobbe, Mylisa Whipple, Peggy Hoppe, Ethan Riepl, Shannon Farrell, James Kelton, Alicia Marty, Brooke Thoele, Saint Louis Zoo

for conducting enrichment research and evaluation projects to generate data to use, share, and have as a tool to refine enrichment efforts, keeping a comprehensive enrichment handbook and developing an enrichment emergency protocol and incident form to help people prepare, respond and document enrichment incidents. Their enrichment building workshop has facilitated the design and building of creative items while saving costs.

Ethan Riepl, Saint Louis Zoo

for using innovative techniques and implementation of enrichment to encourage particular behaviors in animals. Ethan has worked with keepers to create a digital documentation and evaluation system to visualize if the enrichment is encouraging the goal behavior. As the Primate House Workshop Coordinator, he has participated and led enrichment workshops for keepers, docents, volunteers and corporate partners.

Certificate of Merit for Zoo Keeper Education Award

Enrichment & Training Committee, Stacey Tabellario, Chelsea Grubb, Hilary Colton, Kirstin Schoeninger, Judy Tasse, Smithsonian's National Zoo

for initiating and creating Enrichment 101 and Training 101. Both courses are required for new Animal Care employees, but are open to all staff. In addition to familiarizing attendees with current standards in zoos, these courses also include National Zoo's institutional policies on the two topics. Eighty-five employees attended the classes in 2014.

Brian Williams and William Freeman, Disney's Animal Kingdom

for creating and implementing the Animal Care Continuing Education Series for Success (ACCESS). This monthly professional growth lecture series focuses on skills and knowledge used in the day-to-day routines of a professional in the zoological field. Each lecture is offered twice monthly to allow all employees the opportunity to attend.



Smithsonian's National Zoo Enrichment Committee



Brian Williams and William Freeman, DAK



Cheyenne Mountain Zoo Giraffe Team



Yvette Kemp, center, with Lee Houts, right



St. Louis Zoo Primate House Team

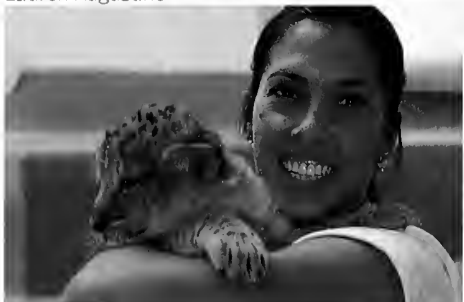


Ethan Riepl





Lauren Augustine



Beth Foster



Mike Henley



Daniel Koch



Christy Mazrimas-Ott



Woodland Park Zoo Raptor Ecology Team

AAZK AWARDS continued

Mazuri® Animal Nutrition Award

Lauren Augustine, Smithsonian's National Zoo

for conducting two scientific studies to improve the nutrition of captive animals. Nutritional analysis of wild prey options was conducted and compared to captive diets to determine the most efficient and naturalistic diet for hellbenders in captivity. The effects of macro and micro nutrients on Spindly Leg Syndrome (SLS) in Golden Mantella frogs are being investigated.

Certificate of Merit in Conservation Award

Beth Foster, Oregon Zoo

for spearheading and organizing the Portland Chapter of AAZK fundraiser, "Comedy Night at the Zoo." In the past two years, this event has raised over \$40,000 for African Painted Dog conservation. Beth also raises money for Painted Dogs through the Chapter by selling Painted Dog merchandise at various events.

Mike Henley, Smithsonian's National Zoo

for his integral role in research for both *in-situ* and *ex-situ* conservation of endangered corals. In particular, Mike is seeking to establish captive populations of threatened Elkhorn and Staghorn coral of the Caribbean by capturing the corals' gametes during their annual mass spawn and rearing the juvenile corals in captivity. In addition, he is helping research cryopreserving coral gametes and stem cells to establish a genetic cryopreserved bank of endangered coral.

Daniel Koch, Saint Louis Zoo

for his work in developing and teaching American Burying Beetle husbandry protocol as a vital part of the WildCare Institute's Center for American Burying Beetle conservation project. An insect keeper for almost twelve years at the Zoo's Monsanto Insectarium, Dan has been involved with the project since its infancy when the first wild-caught beetles were brought to the Zoo. Through his help with propagation efforts, there have been over 9,000 beetles produced to date.

Christy Mazrimas-Ott, Brookfield Zoo

for her commitment to connecting sustainability with forest stewardship in an effort to reduce carbon dioxide through the program "Trees for You and Me." Planting trees reduces carbon dioxide which has a direct effect on preserving Arctic sea ice, slowing down rapid climate change. The program has raised over \$80,000 since 2009.

Raptor Ecology Team, Gretchen Albrecht, Ros Bass-Fournier, Susan Burchardt, Joanna Bojarski, Jeannie Ragland, Regina Smith, Woodland Park Zoo

for joining forces with the Washington Department of Fish and Wildlife (WDFW) to aid in the protection of Washington's native raptor species and their habitats. From nesting surveys, to helping to capture wild birds for blood draws, to years of documenting raptor interaction with wind turbines, the team has logged over 265 volunteer hours with the WDFW. In addition, the Zoo has assisted the WDFW with Bald Eagle rehabilitation.

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Julie Felton — Graphic Designer, for her contribution to the Association for making the Grants and Awards logos.

Leslie Wiener — Western North Carolina Nature Center, for her contribution to the Association for making the Communication Committee logo.

Christy Conk — Disney's Animal Kingdom, for her contribution to the Association for making the Conservation Committee logo.

Richard Kotarsky — Tulsa Zoo, for serving eight years as the AKF Co-Coordinator of the Enrichment Options Column.

Richard Kotarsky — Tulsa Zoo, for serving as the Bylaws Manager.

Julie Hartell-DeNardo — Saint Louis Zoo, for serving as the Behavioral Husbandry Chair and Co-Coordinator of the Enrichment Options Column (not pictured).

Norah Farnham — Woodland Park Zoo, for serving as the AAZK Representative on ICZ's Steering Committee. Her ten years of service includes participation in the planning and organization of four successful international conferences: ICZ Gold Coast 2006, ICZ Seattle 2009, ICZ Singapore 2012, and ICZ Leipzig 2015. Notably, she was the 2009 Conference Co-Chair for the joint AAZK-ICZ 2009 Conference in Seattle.

Erin Tully — Saint Louis Zoo, 2015 National AAZK Conference Co-Chair.

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Bob Cisneros



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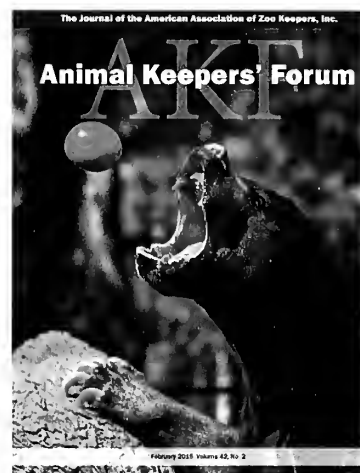
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Susie Ellis, PhD

International Rhino Foundation
How BFR is Saving Indonesian Rhinos

Hand-rearing White-crested Laughing Thrushes (*Garrulax leucolophus*)

as a Method of Increasing Captive Population Sustainability



Alex Zelazo-Kessler, Lead Bird Keeper, Virginia Zoo, Norfolk, VA, USA

A recent survey of 110 avian AZA Breeding and Transfer Plans found that 43 populations averaged an overall decline in population in the last five years (Faust et al., 2011). In Robert Webster's 2012 report of the 100 most numerous passerines in North American institutions, 44 populations number less than 50 individuals (Webster, 2012). In EAZA facilities, only 20% of population increases are a result of institutional breeding, indicating that 80% of European populations are increasing in number because of importation from the private sector.

The solution of importing birds from the wild is no longer a viable option due to cost, availability of quarantine space, lack of in-country contacts, and a lack of permitting knowledge. Many countries are limiting imports and exports of wild-caught birds due to the risk of disease transmission. We must look at all available rearing options and do away with the belief that only parent-reared birds will beget future breeding success. Proper hand-rearing of birds with clutch mates is an easy, though somewhat time-consuming, way to increase passerine populations. Published data is limited but there are several species currently being hand-reared in captive settings, such as Asian Fairy-blue Birds (Bockheim, 2013) and Red-crested Turacos (Peat, 2007), that go on to be successful breeders. There are also reports that some hand-reared bird species, such as the white-crested laughing thrush, will at least partially rear offspring. Pairing these birds with parent-reared birds has resulted in fully parent-reared offspring (Balance, 2014).

White-crested laughing thrushes are very active, gregarious birds found in Southeast Asia. They measure 30 cm tall and typically weigh 120g. As the name suggests, they make frequent vocalizations that resemble raucous laughter. A typical diet in the wild consists of fruit, seeds, and insects from the forest canopy as well as the ground. White-crested laughing thrushes are extremely territorial and live in extended family groups. Both the male and female share incubation and rearing duties. Some instances of cooperative breeding have been observed (Round, 2006).

In the spring of 2012, the Virginia Zoo's pair of White-crested Laughing Thrushes successfully incubated a clutch of four chicks on exhibit. The exhibit is approximately 10 feet wide, 15 feet tall, and 20 feet long. Zoo Mesh (Aviary Mesh) is used on the four sides of the aviary. The top of the back section is covered with green shade cloth. The wooden roof has mesh skylights on one side. A flexible PVC hose with three mister heads runs through the exhibit. The exhibit is moderately planted with small trees and bushes. In addition to 1.1 white-crested laughing thrushes, the exhibit is also home to 1.1 Victoria crowned pigeons and 1.1 pied imperial pigeons (the pied pigeons were removed in 2013 after it was determined that the thrushes were interfering with their incubation). The laughing thrushes are on exhibit year-round while exhibit mates are on exhibit from May-October. The diet of the adult birds, ½ cup softbill mix (70% Mazuri® Lo-Iron Softbill Pellet, 30% produce) and eight bugs,

remains the same throughout the year unless chicks are present. The thrush pair used leaves and coco fiber to build a nest cup inside a woven basket that was placed in a bush in the middle of the exhibit. The nest was approximately one meter above the ground. This nest was also used in 2013. Nests in the wild are typically wide, shallow cups made of bamboo leaves.

These chicks were found to be missing from the nest the day after hatch. Nest predation by pest species was thought to be responsible. In spring of 2013, the pair again incubated and hatched a clutch of four. These chicks were pulled for hand-rearing. The following details the protocol used at the Virginia Zoo in Norfolk, VA, USA to hand-rear the four chicks.

Hand-rearing Protocol for White-crested Laughing Thrushes at the Virginia Zoo, Norfolk, VA, USA

At Hatch

The clutch of four was incubated by the parents on exhibit in an artificial wicker basket they lined with leaves and coconut fiber. The chicks were moved to an Avey cooler brooder after the last chick had externally pipped. Each chick was placed in its own small cup lined with tissue paper and small pieces of coconut fiber. The initial brooder temperature was 94° F and relative humidity was 78%. Pedialyte® was offered via syringe two hours after hatch and every two hours thereafter until feedings began at approximately five hours after hatch. Weight at hatch ranged from 6.5 to 7.7g.

Hand-feeding

Initial feedings consisted of pieces of pinkie mice with the head and appendages removed, finely diced papaya, and pieces of Mazuri Lo-iron Softbill pellet soaked in Pedialyte® (see Table 1 for complete diet history). Each food item was initially offered in equal proportion at each whole feeding. The diet was changed over time so that at fledge the chicks could be transitioned to a typical non-breeding adult diet after fledging. Chicks received one (1) drop (.005ml) of diluted Vitamin B complex (see Products Mentioned) and a small amount of calcium powder on a piece of pellet once a day. Food items were warmed by being placed in a bowl that was floated in a mug of warm water until just warm to the touch. Food was offered via forceps. Feeding between 7 and 10% of body weight resulted in a proper growth weight and satiated chicks. The birds produced intact fecal sacs at almost every feeding. There was no need to stimulate the birds to defecate.

Developmental Notes

At day 3, some of the chicks were trying to stand up at feedings. The first sign of feather growth on the head, back, and abdomen was observed on day 4; small twigs were added to the bottom of each nest cup to prevent splayed legs (Mace, 1991). At day 9, the chicks became more mobile and tried to leave their nest cups; the birds were placed together in a large bowl lined with coconut fiber and twigs. Leg bands were used to ensure identification. On day 10, the chicks were completely covered with feathers. On day 12, the birds and their nest bowl were moved to a fledge cage 3ft long by 2ft wide by 2ft high. A heat lamp was used to create a heat gradient ranging from 77° F to room temperature (72° F). Temperature in the cooler brooder had been decreased after day three at a rate of approximately 1.5 degrees F per day until the birds were moved to a fledge cage (Owens and Edmans, 2007). By day 13, all of the birds fledged. A food bowl and a shallow water bowl with paper towels in it to prevent drowning was left in the fledge cage with the birds at day 14. Food was now presented by using tweezers to move food items around in a bowl in front of the chicks. On day 16, chick 'A' was



Pictorial Progression of the Development of Four White-crested Laughing Thrushes (*Garrulax leucolophus*) at the Virginia Zoo, Norfolk, VA, USA; Pictures Taken (top to bottom) at Hatch, Day 1, Day 5, and Day 9.

observed playing with food items, though not consuming them. By day 19, it was clear that at least one of the chicks had begun self-feeding as food items left in the bowl were disappearing between feedings. Vitamin supplements and the heating of food items were discontinued on day 21. By day 22, all of the chicks showed little interest in food presented at feedings though their weights continued to increase. Day 24 was the last day of hand feeding for all the chicks.

The adult thrushes were allowed to rear their next clutch of eggs on exhibit. Three eggs were incubated and hatched. All three chicks survived to fledge. At that time, one chick died of a fungal infection. Shortly after, one of the other chicks exhibited signs of lethargy and was taken off exhibit and the weaning process was completed by keeper staff in an off-exhibit holding area. The last chick was able to remain with his parents until the weaning process was complete.

There is no discernible behavioral difference between the hand-reared and parent-reared birds. Hand-rearing the first clutch of offspring enabled us to significantly increase our population. Moving forward with this and other passerine species, the zoo community should track the future reproductive success of hand-reared birds in order to determine which populations can benefit from hand-rearing.

Table 1. Diet, Average Amounts Fed, Number of Feedings, and Average Weights of Four Hand-reared White-crested Laughing Thrushes (*Garrulax leucolophus*) at the Virginia Zoo, Norfolk, VA, USA.

Day	Diet (items shown in % of diet)	Average Amount Eaten Per Feeding (g)	Average Amount Eaten Per Day (g)	# Feeds Per Day	Average Weight (g)
0					6.8
1	33 pinkie mouse	5.5	5.5	11	8.3
2	33 papaya	1.21	10.9	9	11.5
3	33 pellet (soaked in Pedialyte®)	1.26	11.37	9	15.65
4		1.49	10.43	7	22
5	33 pinkie mouse	2.05	14.32	7	24.78
6	33 papaya	2.27	15.89	7	29.98
7	33 pellet (soaked in bottled water)	3.3	19.79	6	34.08
8	30 pinkie mouse, 33 fruit, 33 pellet (soaked in bottled water), 3 cricket abdomens	4.07	24.4	6	41.93
9	30 pinkie or fuzzy mouse (with head and appendages), 33 fruit, 33 pellet (soaked in bottled water), 3 cricket abdomens	4.68	28.08	6	46.15
10		4.27	25.6	6	50.1
11	28 pinkie or fuzzy mouse	3.7	14.83	4	53.9
12	33 fruit	3.95	19.73	5	49.08
13	33 pellet (soaked in bottled water)				
14	3 bugs (meal worms and cricket abdomens)	3.53	17.65	5	49.95
15		4.53	22.63	5	49.92
16		4.73	18.93	4	52.13
17	23 pinkie or fuzzy mouse	3.93	15.7	4	53.88
18	20 fruit and veg	5.38	21.5	4	55.13
19	47 pellet (soaked in bottled water)	5.13	20.53	4	57.95
20	10 bugs (meal worms)	5.28	21.13	4	59.05
21		5.56	22.25	4	61.03
22		5.86	17.63	3	61.73
23	20 pinkie or fuzzy mouse	5.26	15.77	3	63.25
24	25 fruit and veg	4.76	4.76	1	67.03
25	50 pellet (soaked in bottled water)			1	68.15
	10 bugs (meal worms and super worms)			0	73.57

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Products Mentioned

Avey Cooler Brooder: <http://www.precisionincubators.com/brooders-for-parrot/the-original-cooler-brooder/>

Pedialyte®: Unflavored, <http://pedialyte.com/products/liters>

Vitamin B complex HP (high potency). A 1:9 dilution.

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Niacinamide 100 mg

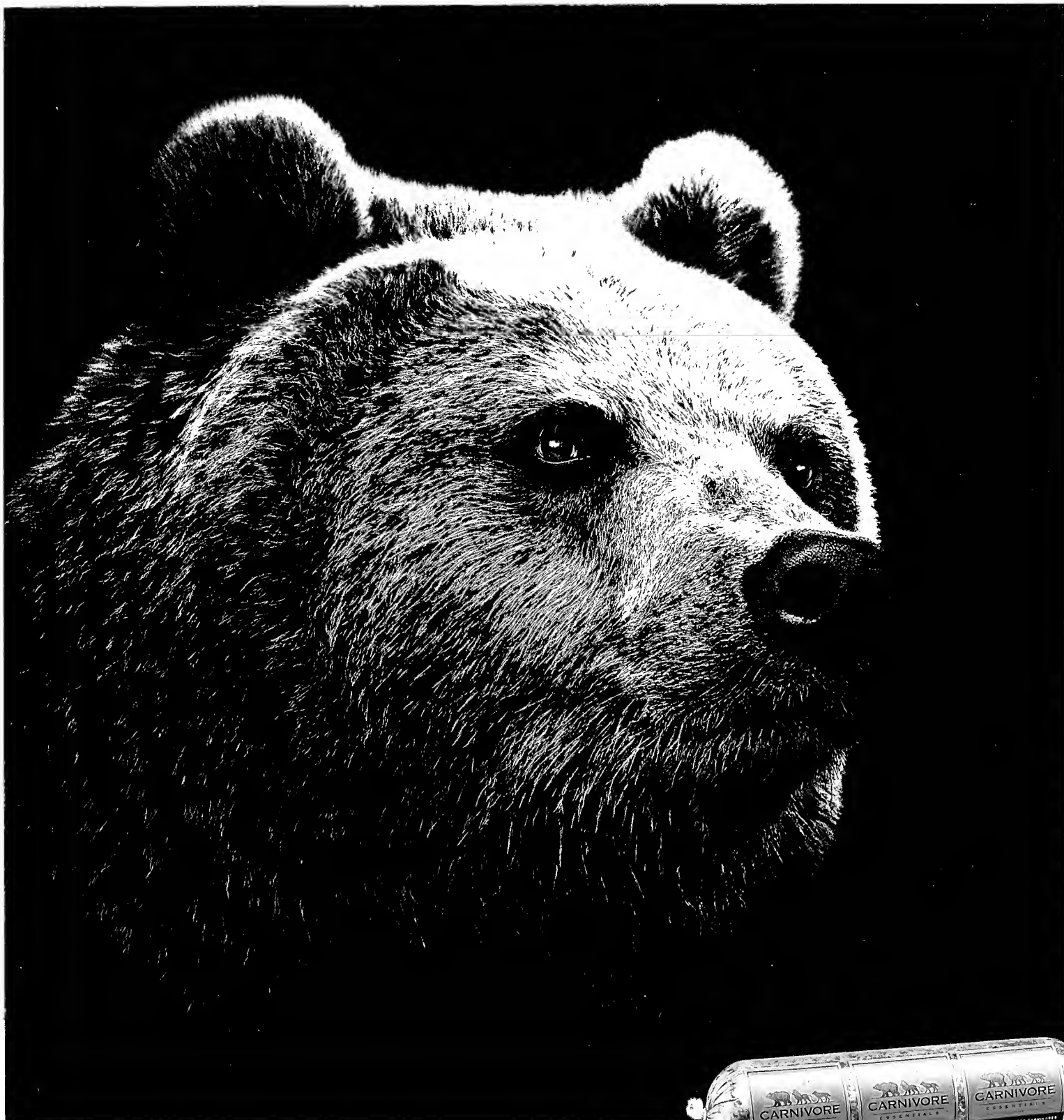
Pyridoxine Hydrochloride (B6) 10 mg

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Cyanocobalamin (B12) 100 mcg

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Using an Operant Conditioning Program to Target Train a Yellow Stingray (*Urobatus jamaicensis*)

Danielle Estes • Cameron Park Zoo, Waco, TX

Information

Yellow stingrays (*Urobatus jamaicensis*) live in most areas of the Gulf of Mexico and have a high concentration in the Florida Keys and all along the Florida coast. They have a lifespan of 15 to 25 years. Small and docile, the yellow stingray adapts readily to captivity and has reproduced in the aquarium; it requires a large amount of space (at least 180 gal or 684 L) and a fine, deep substrate with minimal ornamentation (Michael, 2001). They can be found up to 80 feet deep in the wild. In order to attract potential prey, the yellow stingray lifts the front of its disc and remains motionless, forming a "pseudo-cave." Prey animals that seek shelter in this space may be eaten (Mulvany, 2009).

Knowing about an animal's natural history, sensory biology, and behavior of species is important before proceeding to train them. We chose a visual target for our Yellow Stingray, "Avalon". Studies show that elasmobranchs have good vision and smell, although whether they can see color is unknown (Gruber and Cohen, 1978). Our target was a circle shape with a bold red "X" on it to account for both color and shape. Avalon was very skittish to loud noises, which told us not to use an auditory target (i.e.- tapping) like we do with animals that don't have good sight.

Behavior modification is the process by which a subject's responses to a stimulus are altered or changed by successively reinforcing certain aspects of a targeted behavior (Scardina-Ludwig and Messinger, 2001). Operant conditioning is a form of behavior modification in which behaviors are altered primarily by regulating the consequences that follow them. So our goal was to have her response to the target stimulus be to move towards it, and when she accomplished this goal she was rewarded. Many benefits can be achieved through the implementation of animal training programs, including: (1) enrichment, or the physical and mental stimulation of trained animals; (2) better control and monitoring of animals during feeding sessions, particularly when many animals are involved; (3) reduced stress to animals while handling during transports, veterinary examinations, and in-house research; (4) the implementation of advanced husbandry techniques; (5) enhanced educational presentations; and (6) the development of a positive association between animals and caretakers, facilitating acclimatization to new environments (Baker, 1991).

Method

Avalon was kept in a 220 gallon tank at a salinity of 30 ppt with carefully monitored water quality. This training was conducted in the salt water quarantine area of the Cameron Park Zoo, Waco, TX. The training began 4/16/2014 and ended 6/24/2014.

By using the recognized training method of S.P.I.D.E.R. (Set Goals, Plan, Implement, Document Results, Evaluate, Re-adjust Program) we began our target training. Our goal was to increase the behavior of eating food from the target using shaping. The plan was to use successive approximations by starting slowly, and then make eating off the target

increasingly different and difficult. Our first step was to leave the target in the water with her for a few days. This way she would be habituated to the presence of the target and would not see it as a threat. Then we began to counter-condition (desensitize) her by putting food on the target and nowhere else in her tank. Each time food, usually capelin or mackerel, was put in her tank on the target we would time her on how long it took her to get to the target to eat her food. Whenever she came to the target she was rewarded with food. No bridging stimulus was necessary because she would be instantly rewarded on the target when she came to it. We left the target in the same spot in her tank while feeding her on it for about a week each time or until her times improved, and then we would move it to a new stationary location. The target was never removed from her tank for these trials, only moved to new locations within the tank. Once it was taking her about 30 seconds to get to the stationary target we began only putting the target in the tank when it was feeding time and removing it when it wasn't. This helped to affirm that this target means "it's feeding time". In this phase we would put the target in with food on it in the same spot every day for about a week or until her times improved. Then we would take it out and put it right back in the same spot with more food on it.

The next step after her times began improving with this spot was to move that target to a new spot for another week, only putting the target in when there was food on it. We used a total of three different spots until we moved on to the final step. In the last phase we would put the target in with food on it in random spots around the tank each time. We tried not to use the same spot twice. That way she knows the location of the target isn't important; it's that target itself that holds the importance.

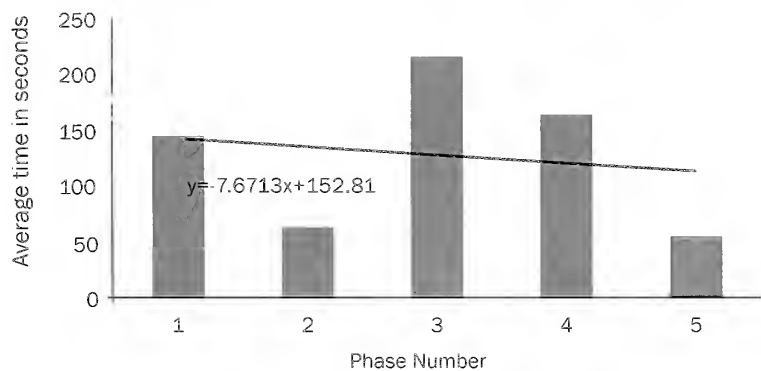
An ANOVA (test for significant differences between means) was run on the feeding times in each trial to test for a significant difference in the times. The slopes for each trial's feeding times were also graphed to produce a learning curve.

Data

On average there were a total of six separate trials per day. The trial categories are as follows: Target Stationary Location 1, Target Stationary Location 2, Target Held by Hand Location 1, Target Held by Hand Location 2, Target Held by Hand Location 3, and Target Held by Hand in Random Locations. The stingray's overall learning curve is shown by the slope in Graph 1. The individual trials have negative slopes indicating a learning curve at the rate of the slope. These slopes for the individual categories are listed in Table 1. This shows her speed of learning each of the individual phases. The average times of the phases were graphed (Graph 1) to show which phases she was able to complete the quickest and the slowest.

Discussion

Avalon's learning curve is not steep or quick in the first phases but it

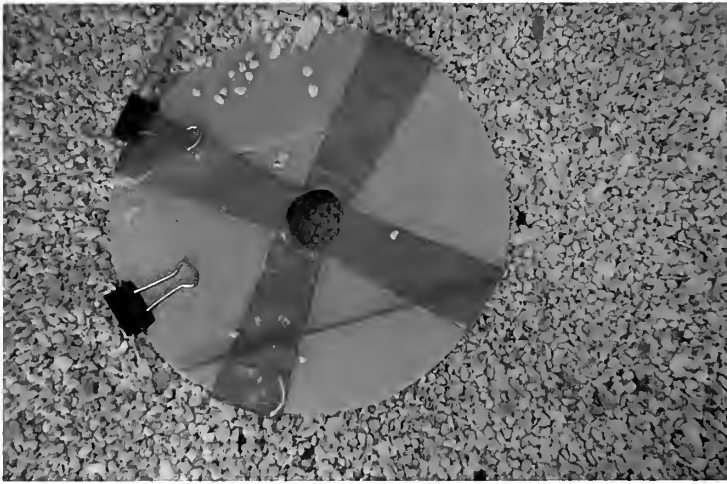


Graph 1: Average times in each phase. Phases labeled by number in graph. Target Stationary Location 1(1), Target Stationary Location 2(2), Target Held by Hand Location 1(3), Target Held by Hand Location 2(4), Target Held by Hand Location 3(5), and Target Held by Hand in Random Locations(6)

Slope of learning curve for overall training:

	Phase	Slope of Learning Curve
1	Target Stationary Location 1	19.185
2	Target Stationary Location 2	-2.17
3	Target Held by Hand Location 1	-18.88
4	Target Held by Hand Location 2	-10.49
5	Target Held by Hand Location 3	-1.54
6	Target Held by Hand in Random Locations	-0.205

Table 1: List of learning curves for individual phases. Taken from slope equations of times graphed in each phase.




The target was a circle shape with a bold red "X" on it to account for both color and shape.

begins to get steeper in the middle phases. Then as she learned the behavior it leveled off in the end phases. Sometimes it would take her immense amounts of time, up to 20 minutes to discover, or be brave enough to take food from the target. Her times always continued to get quicker, even near the end of the training, Rays and skates may learn faster than most bony fishes, at a rate comparable to white rats and pigeons (Alston et al., 1987). Our training was effective and the results were clear to see while we gathered the data. While evaluating her results we concluded that our methods were working and needed very little re-adjustment. One adjustment that was made was to make sure lots of different people were holding the pole attached to the target because, at first, she would react differently to different people. This is most likely due to a ray's ability to detect bio-electrical fields emanating from living organisms with voltage gradients as low as 0.01 Vcm⁻¹ (Kalmijn, 1981).

It was important to our facility to implement an elasmobranch training and husbandry program so that we could reduce stress in stingray during handling, improve basic husbandry, enable more advanced husbandry techniques, and enhance public presentations. As of now, formal elasmobranch training and husbandry is rare in public aquariums. Since this training, we have implemented Avalon's target training to encourage her to enter a feeding box to receive food. She will eventually be in a large 30,000 gallon exhibit with many other species of fish. We needed to design a way for her to eat without the other fish stealing her food, and the feeding box seemed like the best option.

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BHC comments by Jay Pratte:

It's tremendously exciting to see a Tale come in about a species that is not often known for being trained. There are a few facilities (the aquarium at our zoo included) that do some targeting and station work with elasmobranchs, but having the data to pair with the description is a terrific boon! The author has documented how quickly the animal learned, and very obviously considered several of the variables that could impact/skew the training and results.

The best take away message in the Tale that applies to ALL species is about variation of time and location of training. If you always train an animal at the same time, in the same location, then when you want or need to use the training outside of those parameters the animal is often confused or frustrated. It is easy for us to think that the animal lies down on cue, but unless the cue is tested in differing circumstances, the animal could actually be learning superstitious ideas about the behavior that we do not catch until it's too late. We may *think* the animal is trained to lie down on cue, when in fact the animal has learned to anticipate when we shift them into a specific holding area and then just complies. By offering the cue and ensuring the correct response is given whenever, wherever, then we know we have true stimulus control!

This is great work, and like the author describes, now this station behavior can evolve into the animal "crating" itself into her box, where she could be moved, observed or treated by vets, weighed, etc. Stingrays will learn to tolerate many things when taught with patience and a consistent reward system. We train ours for stationing, exhibit transfers, tactile desensitization, and have even performed ultrasounds on two species of ray. This Tale embodies the spirit that "anything can be trained", and gives us the science to back it up! Thank you, and amazing stuff.

We want to hear your Training Tales – the good, the bad and the fabulous!

Please submit your "Training Tales" and experiences in operant conditioning to share with *Animal Keepers' Forum* readers. This opportunity provides a convenient outlet for you to exhibit your training challenges, methods and milestones with the AAZK member network. Please submit entries based on the following guidelines:

- Submit a brief description of a training project at your facility. These can be 500 words or less, in text or bullet points – it can be longer (up to 1000 words); however, short and simple descriptions with a few images are just as perfect. Details should include the following:
 1. Define the training goal (what did you try to do and for what purpose?)
 2. List important steps (How did you do it – include plans that changed along the way/what worked & what didn't work)
 3. Timeline used (how long did it take)
 4. Tips you learned along the way
- Include 3-5 digital photos that clearly depict the animal in the learning process or performing the desired goal (provide photo caption and photographer of each image). Photos need to be 300 dpi and at least 1200 x 1800 pixels.

Please send entries or questions to:

Kim Kezer at kkezer@zooneuengland.com or

Shane Good at shane.good@aazk.org

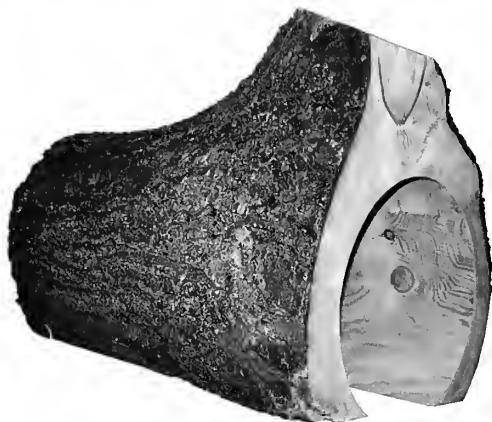
(use Training Tales Submission as the subject)

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Chapter 10 - The Wonderful Cassowaries

from *The Honolulu Zoo* by Paul Breese & Jean DeMercer-Breese

My Fascination with These Birds Began Early

"Hurry! Hurry! Hurry! Right this way!" the carnival barker shouted. "See the Mermaid from Fiji! Watch Princess Fatima charm her Giant Serpents! See Texas Tommy, the World's Biggest Turkey! They're all alive! Only one thin dime! Step right up, folks!"

It was 1936 and I was thirteen years old. My Boy Scout troop from our village of Alta Loma was at the midway of the Los Angeles County Fair in the city of Pomona. All of us scouts went into the sideshow.

Seeing my first cassowary that day began my lifelong fascination with these magnificent birds. I can still visualize the canvas sign on the midway that showed the brilliant colors of the bizarre creature that was billed as "Texas Tommy, the World's Biggest Turkey." That live sideshow cassowary proved to be even more remarkable than the gaudy one painted on the carnival banner.

San Diego Zoo's Cassowaries

I next encountered cassowaries while attending college and working at the San Diego Zoo as a sightseeing bus driver-guide. I told my bus passengers about these large, flightless birds over the loudspeaker. I recall that my script said that cassowaries were native to New Guinea, and were the world's second heaviest birds, with only ostriches weighing more.

Cassowaries at Waikiki

A few years later, I remember seeing cassowaries at the Waikiki Bird Park during World War II. When my navy ship was in Hawaii, my former co-worker at the San Diego Zoo, Charles Shaw, then a Marine stationed at Pearl Harbor, and I arranged to take a day off to explore nature in Hawaii. We visited the Waikiki Bird Park for the first time and observed several exceptionally large cassowaries.

Seeking Cassowaries in New Guinea

My navy ship stopped at several locations in New Guinea during the war. Although I took many hikes ashore on my off duty time, I only found a few cassowary footprints in muddy areas and admired their feathers worn as ornaments by the natives.

Revisiting New Guinea in 1960 for Zoo Birds

While in New Guinea at the Wildlife Sanctuary in 1960 to obtain birds of paradise, I observed captive cassowaries and sought wild ones. The sanctuary ornithologist Fred Shaw-Mayer told me a few lived in the vicinity, but were very wary. Unfortunately, seeing them in nature eluded me again.

The Complexities of Raising Cassowaries

When I began as director of the Honolulu Zoo in 1947, there were still four cassowaries remaining from the Waikiki Bird Park era, all kept separately. These were the same birds that Chuck Shaw and I had seen there three years earlier. (The Waikiki Bird Park soon became part of the Honolulu Zoo.)

As my interest in cassowaries increased, I learned that no zoo anywhere had raised these giant birds. They were almost always kept apart since they were usually viciously hostile toward each other, which made breeding them exceedingly challenging. Propagating these impressive birds became one of my goals.



Getting Our Cassowaries Together

In 1951, we had recently built new pens to exhibit all of the world's four types of large, flightless birds: ostriches, emus, rheas, and cassowaries. Veteran Supervising Keeper Tom Steward and I were talking near these pens. "Well, Tom, I know it's risky but we need to put the cassowaries in with each other if we're going to raise them." Tom cautioned, "Paul, these big brutes are nasty! We never go in with them and always treat them the same as lions or leopards." He told me of a time when two of them accidentally got together and kicked and sliced each other with their knifelike toenails. "They fought like big fighting chickens," he said. "But since you want to put them together, I'll make some special sticks to protect us." We knew the largest bird was a female because she had laid eggs in the past, and we suspected that the one in the next pen was likely a male because it hadn't laid during its many years at the park. "Let's plan on putting them in the same pen and hope they mate before they hurt each other. So, Tom, what do you think is the best way for us to get them together?" I asked.

"I believe we should leave the female where she is and move the other one in with her," said Tom. "All right. Let's plan on doing that as soon as she lays her first egg this year," I replied.

First Egg of the Year

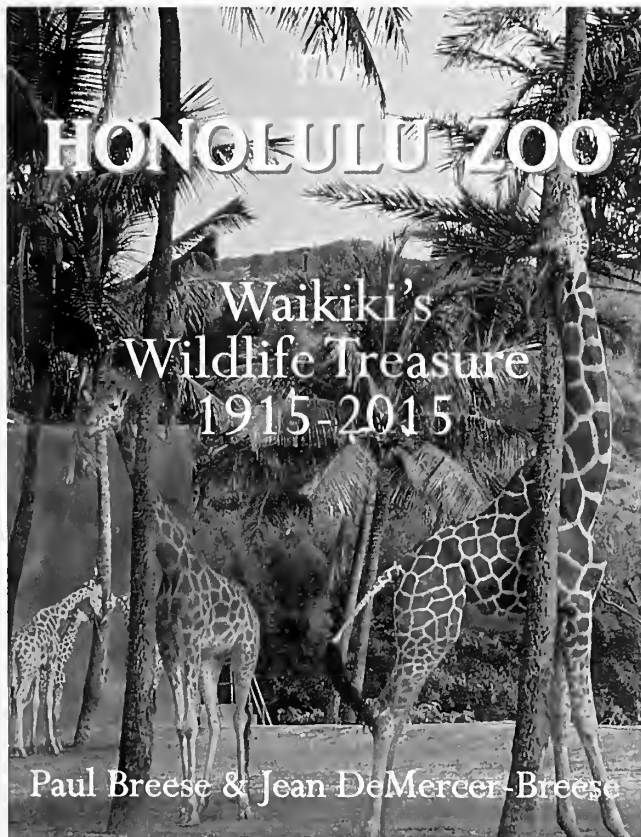
In early spring, the female laid her first egg of the season. Since she had started to lay, it was now time to put them together to give them a chance to mate so the female's next eggs might be fertile.

The Challenge of Kicking Cassowaries

The next morning Tom and I, along with two strong animal keepers, met at the birds' pens. Keeper Norimasa "Masa" Takushi held a hose so he could divert the birds with a hard stream of water if they fought. Keeper Fred Jesus and I waited just outside the female's pen. Each of us held a T-stick, a six foot long wooden pole that Tom had made with a cross stick on the end. These poles were designed for us to use in separating the cassowaries when they fought and for our protection to fend off the birds if they rushed us...



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